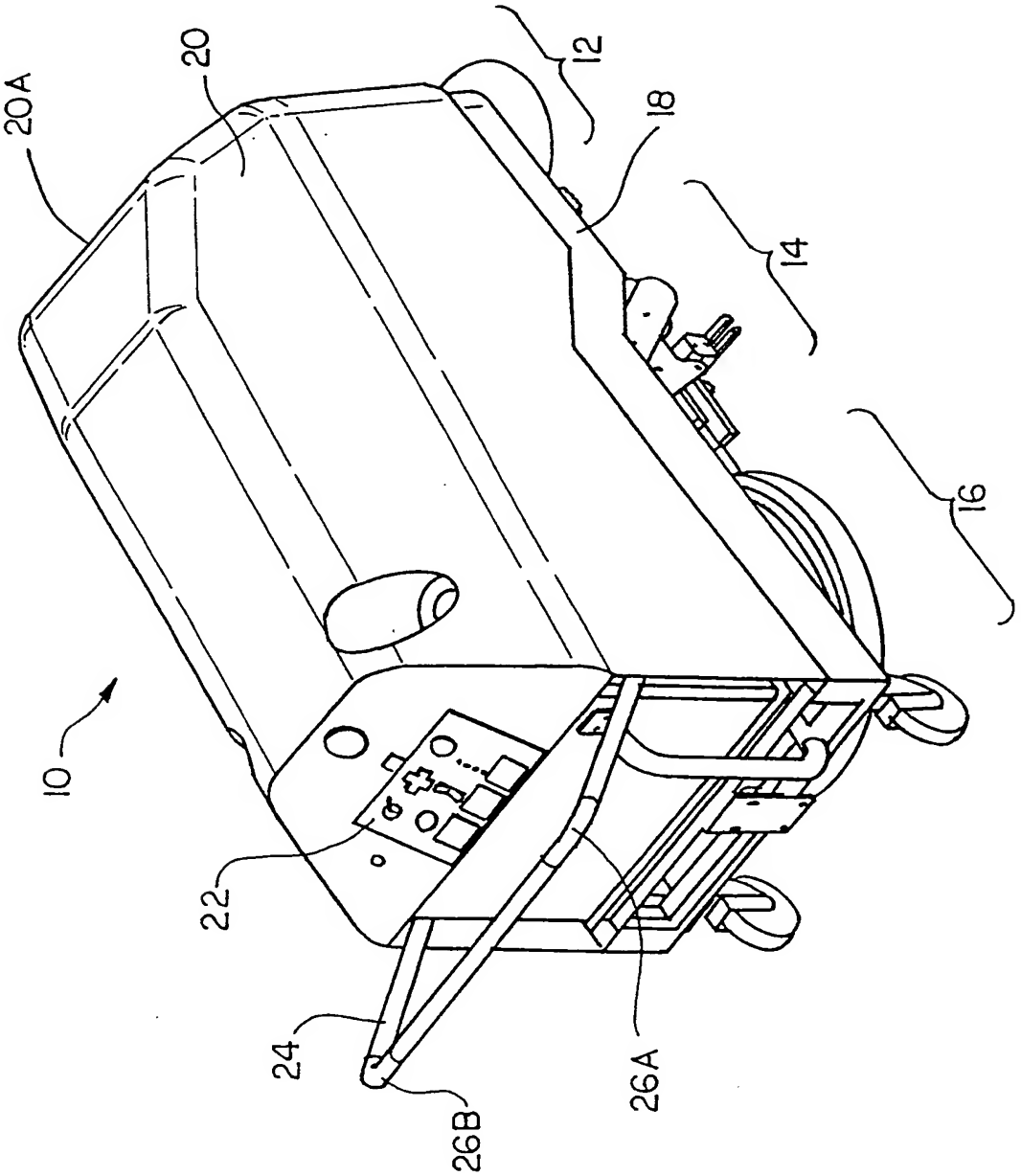

FIG. 1

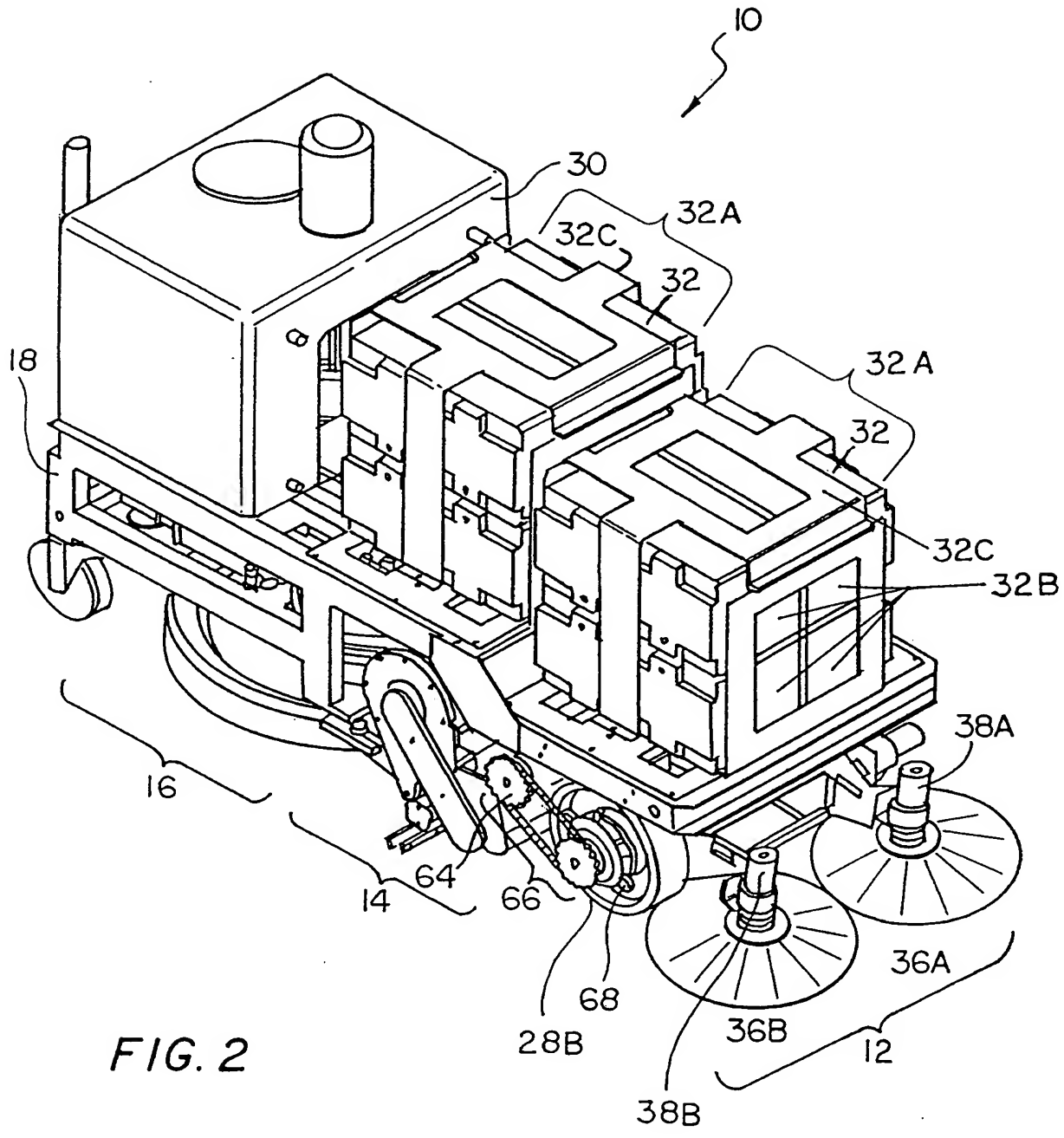

FIG. 2

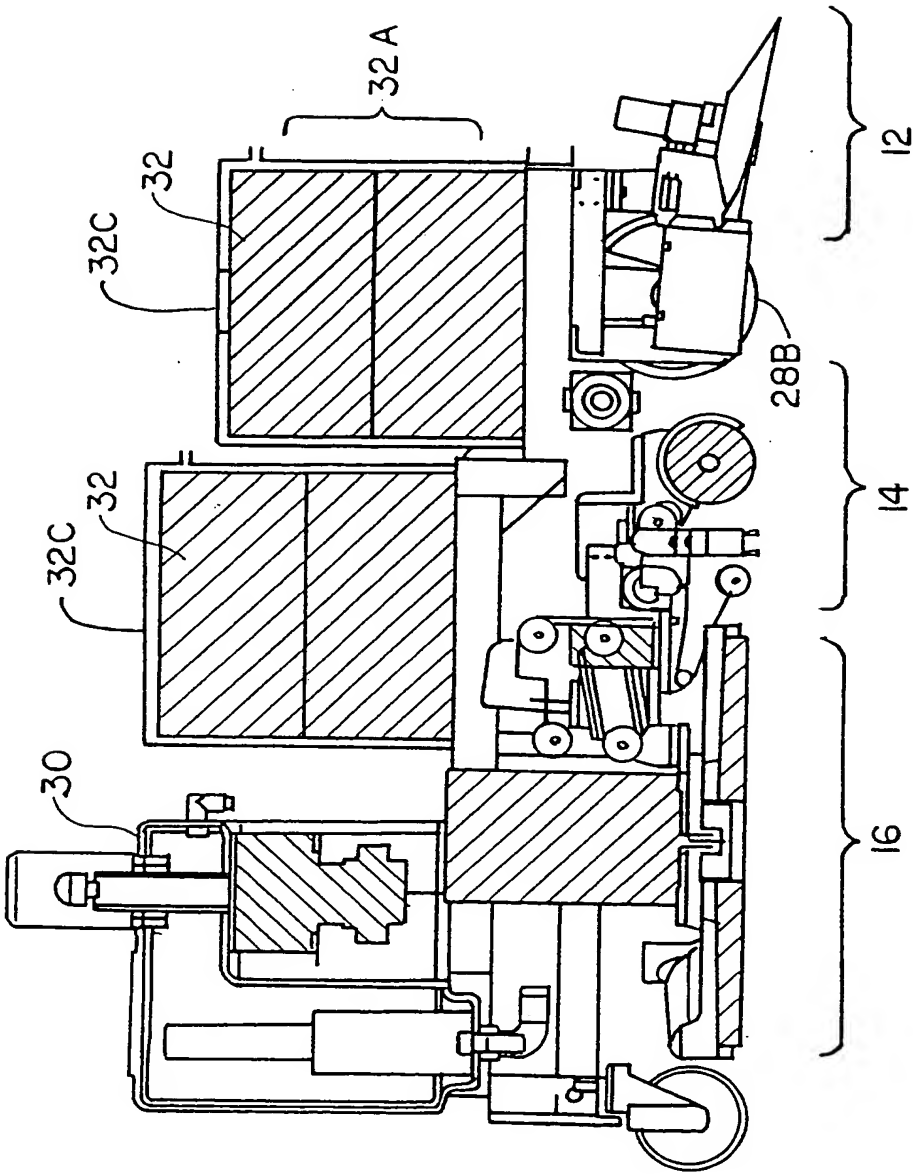

FIG. 3

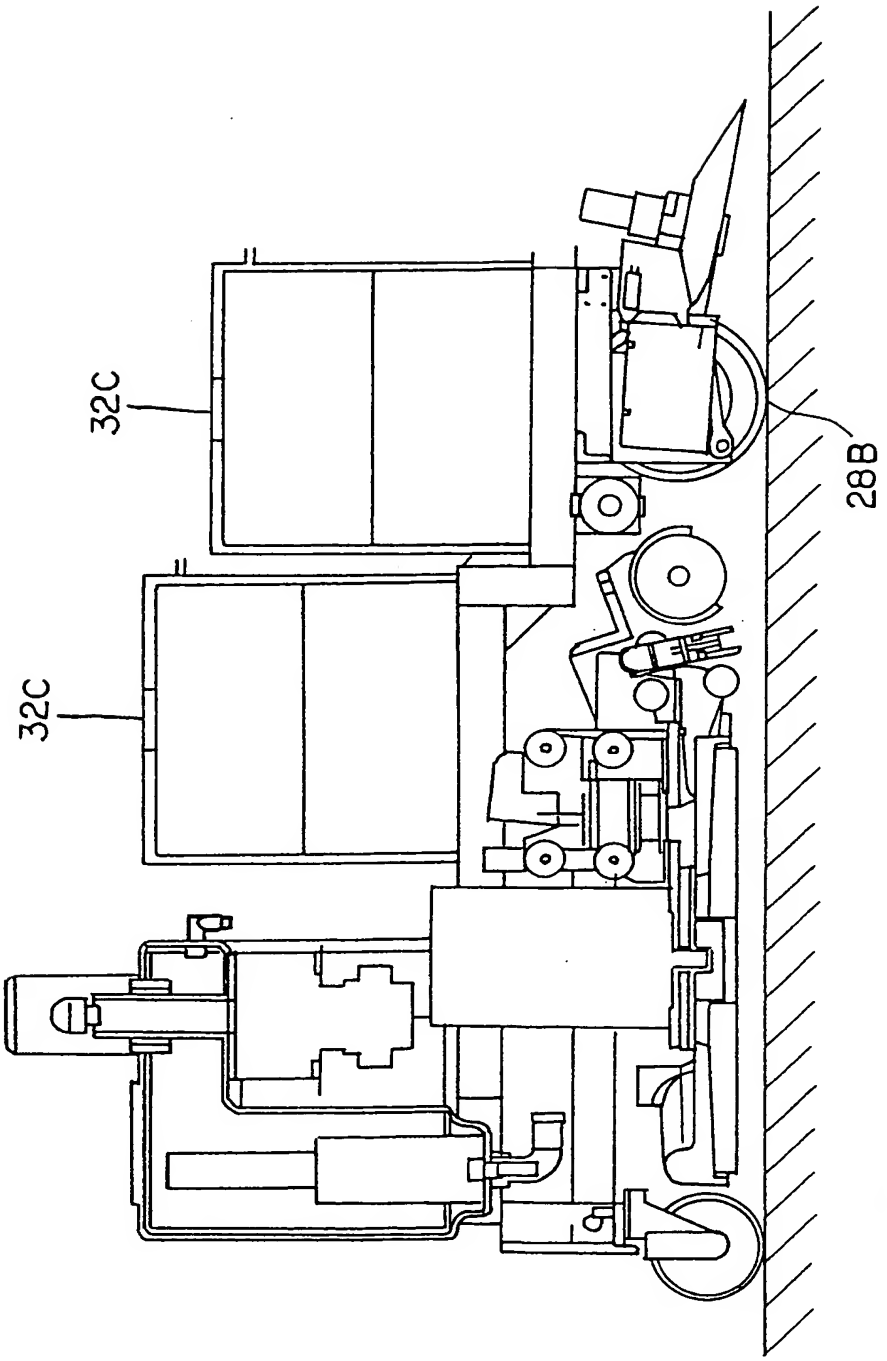

FIG. 3A

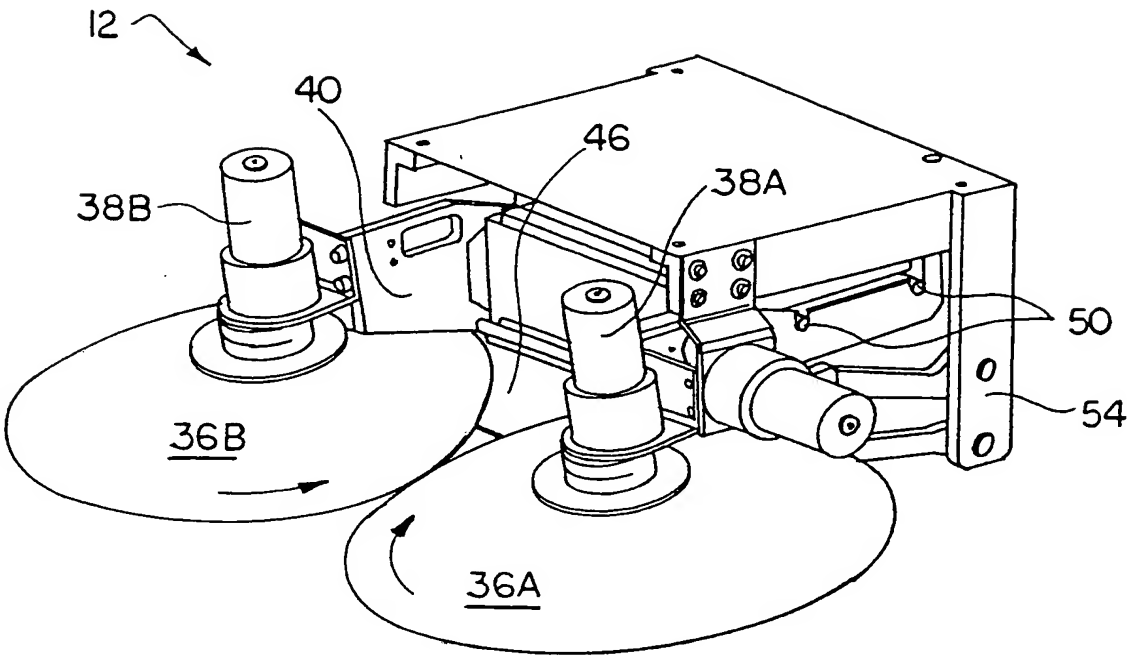

FIG. 4

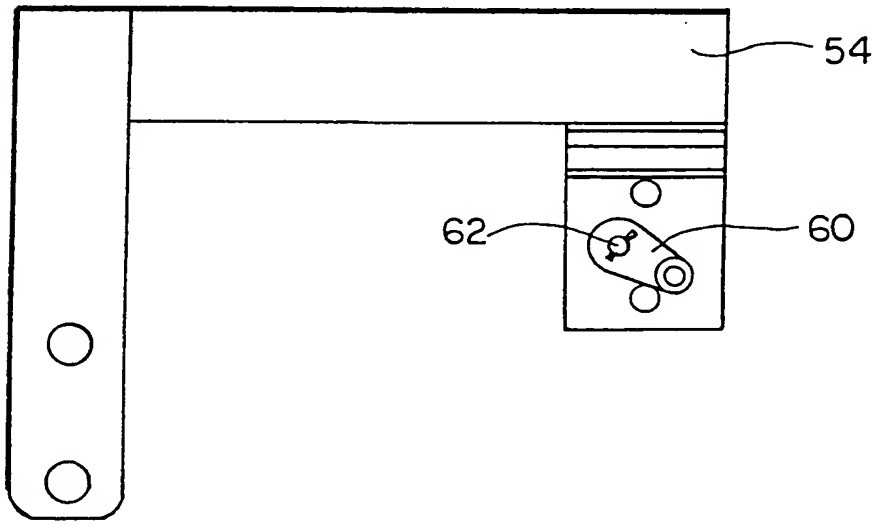

FIG. 4A

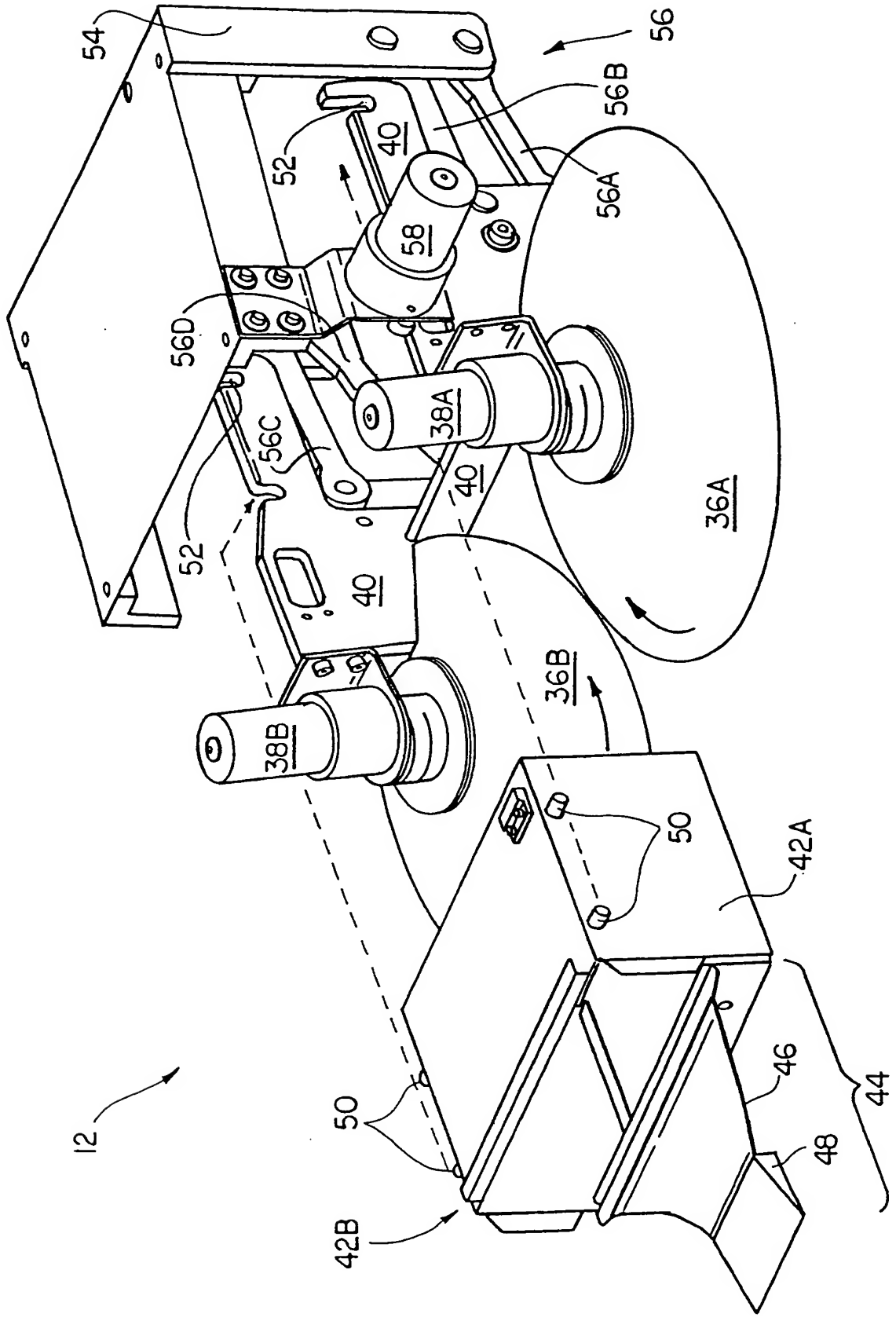

FIG. 5

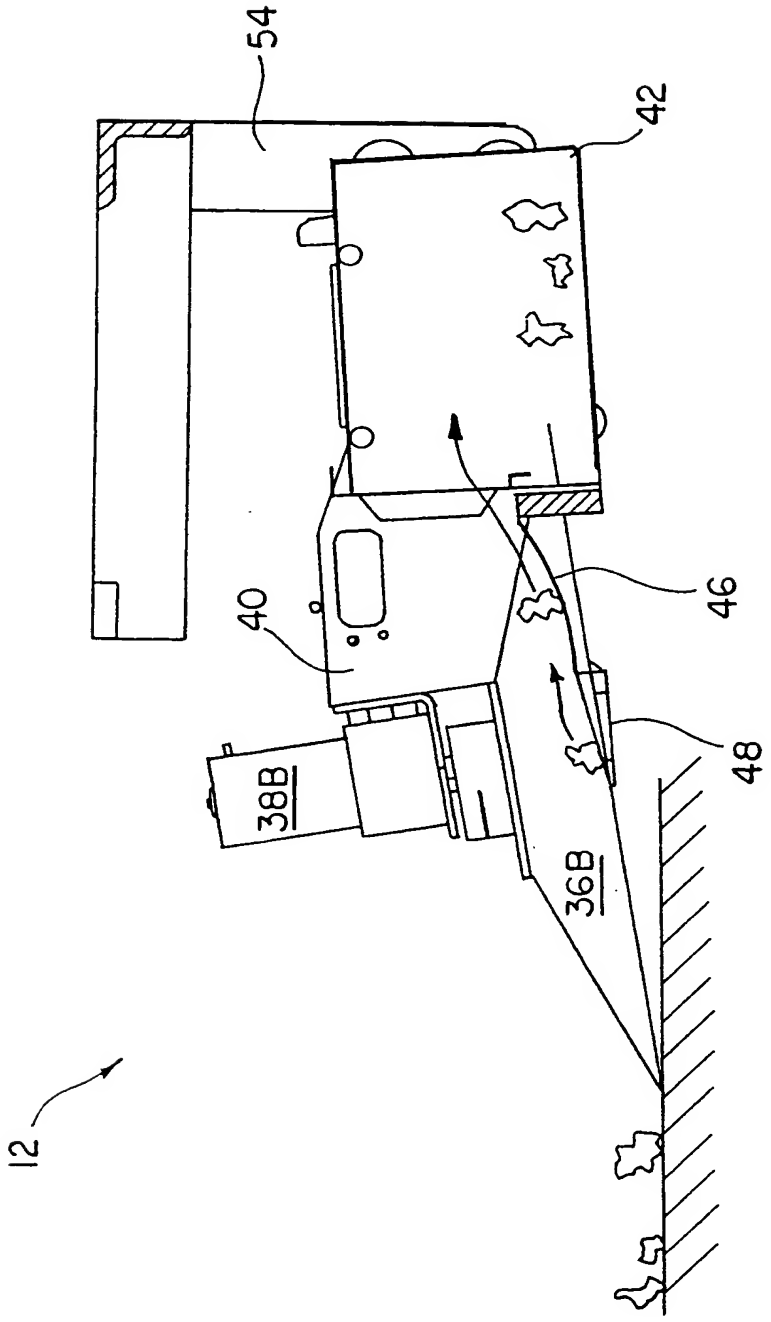

FIG. 6

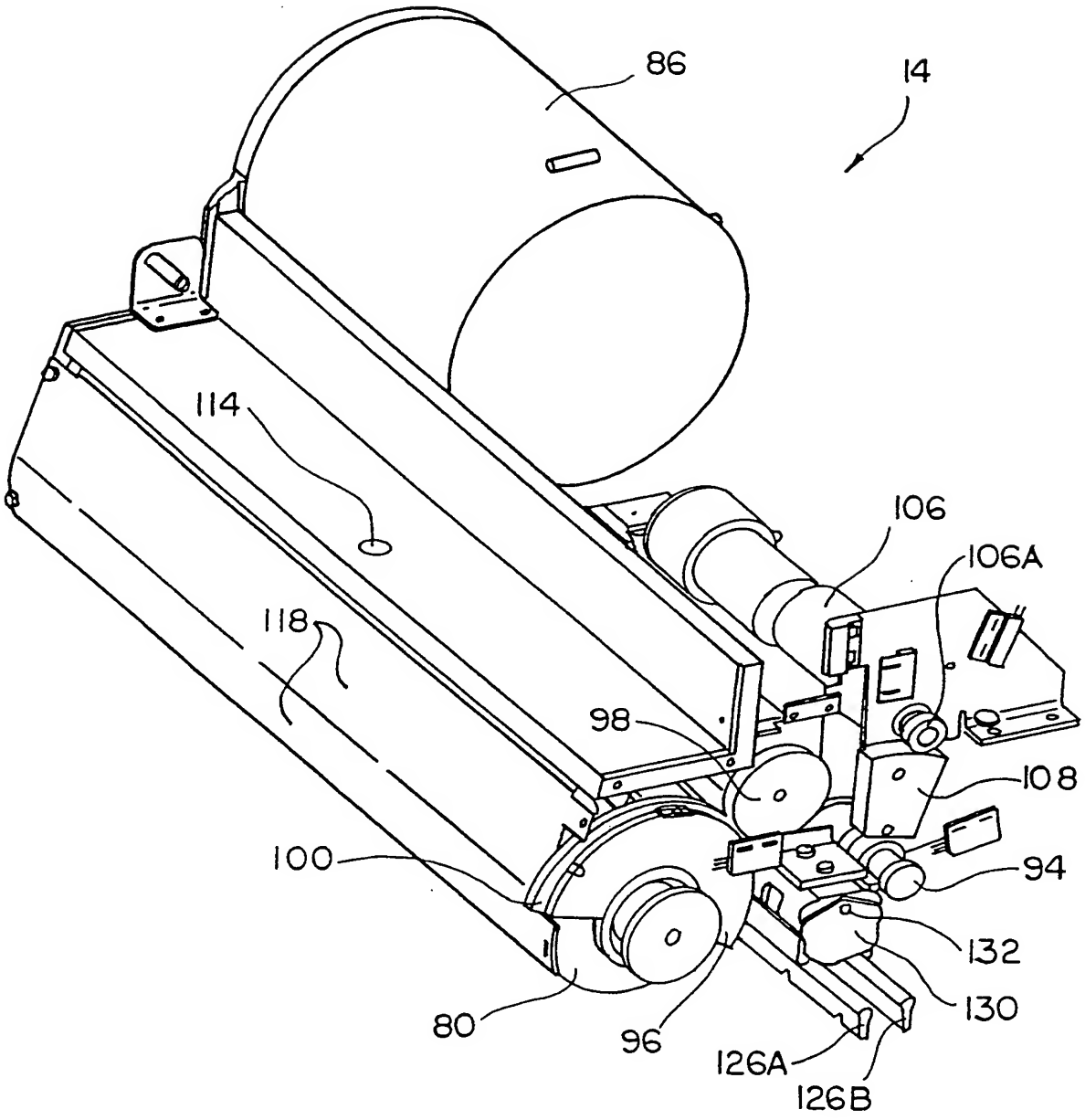

FIG. 7

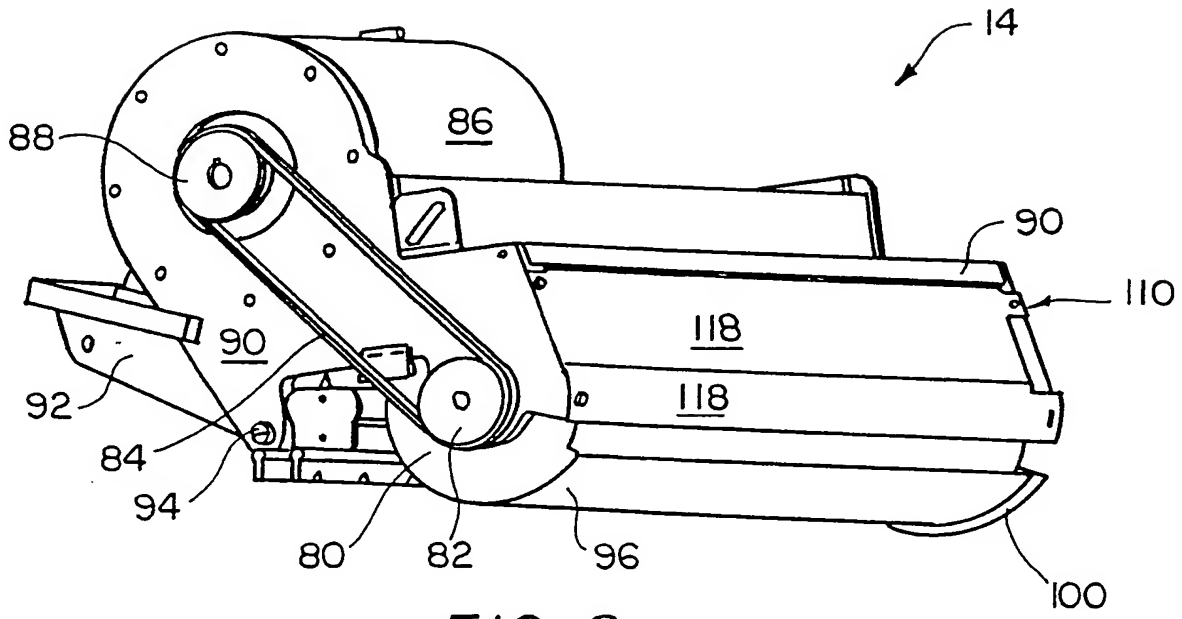

FIG. 8

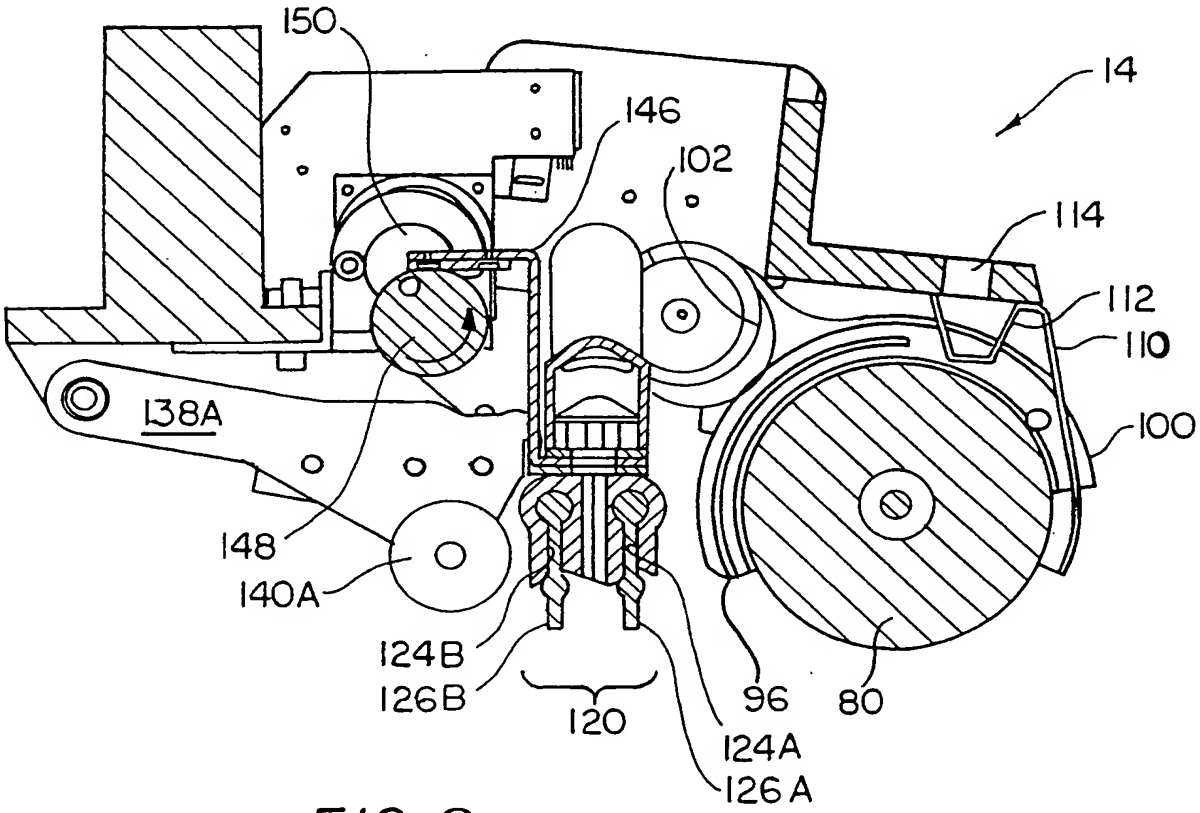

FIG. 9

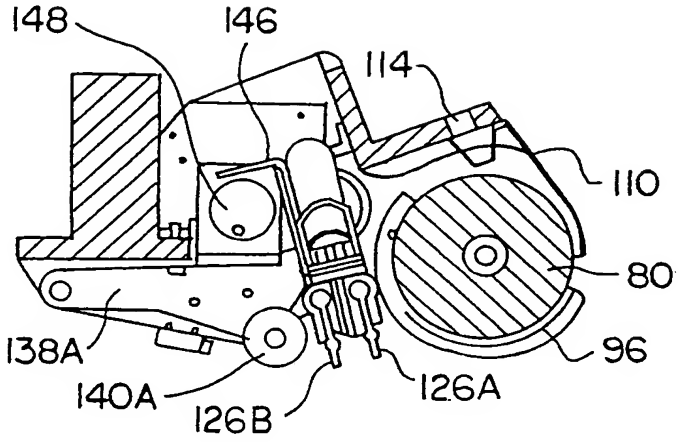

FIG. 9A

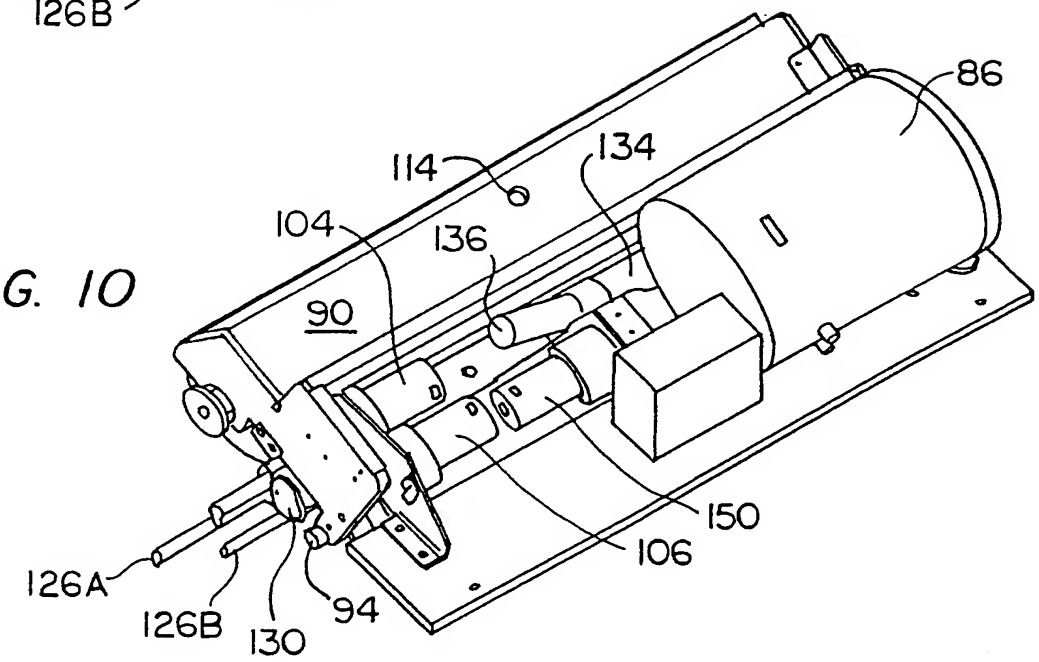

FIG. 10

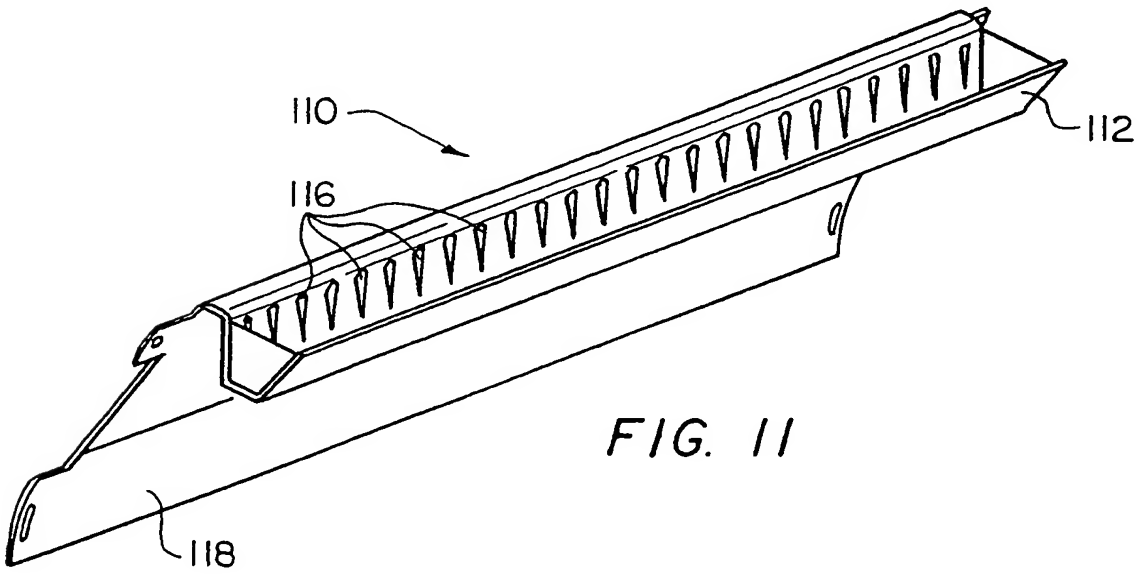

FIG. 11

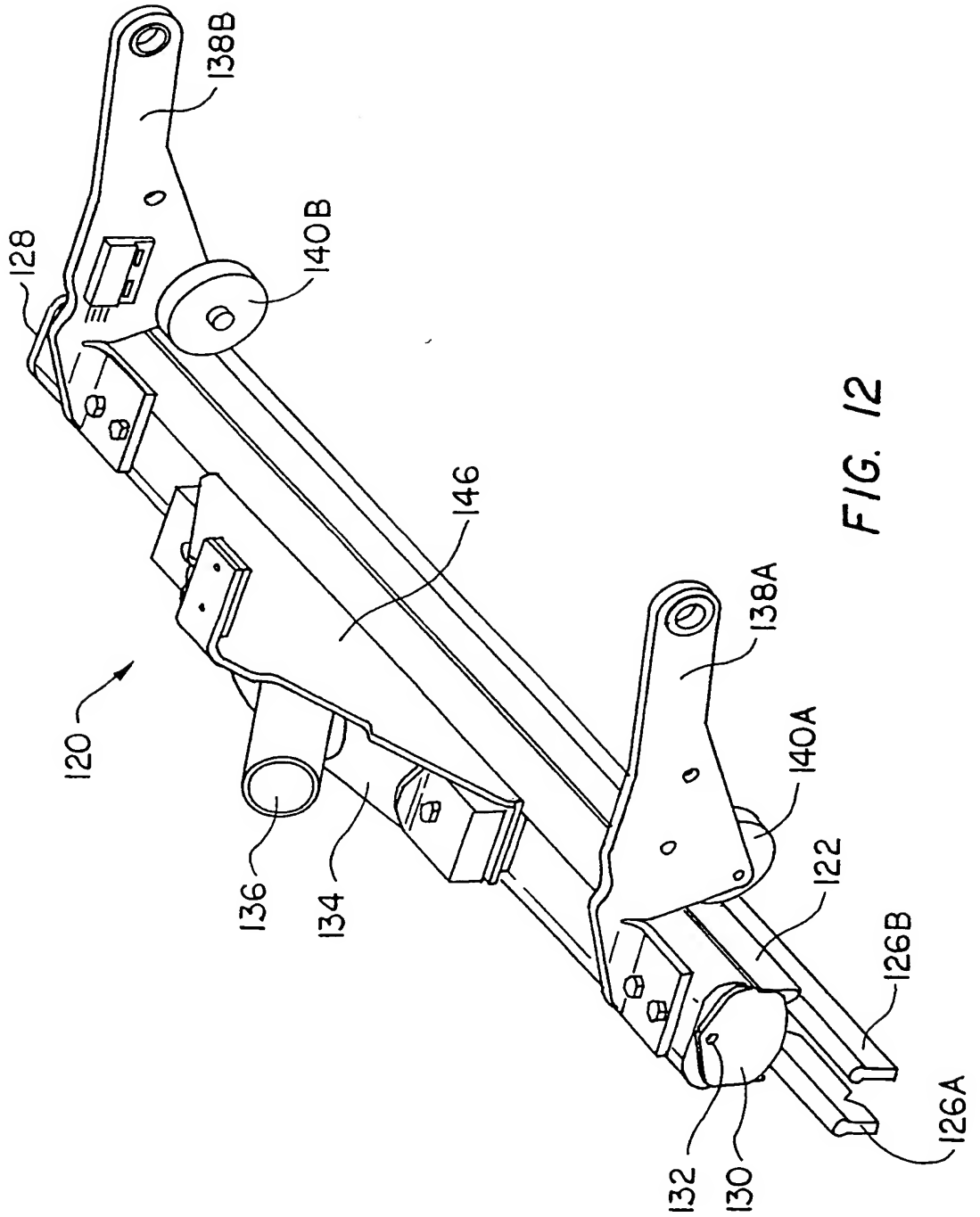

FIG. 12

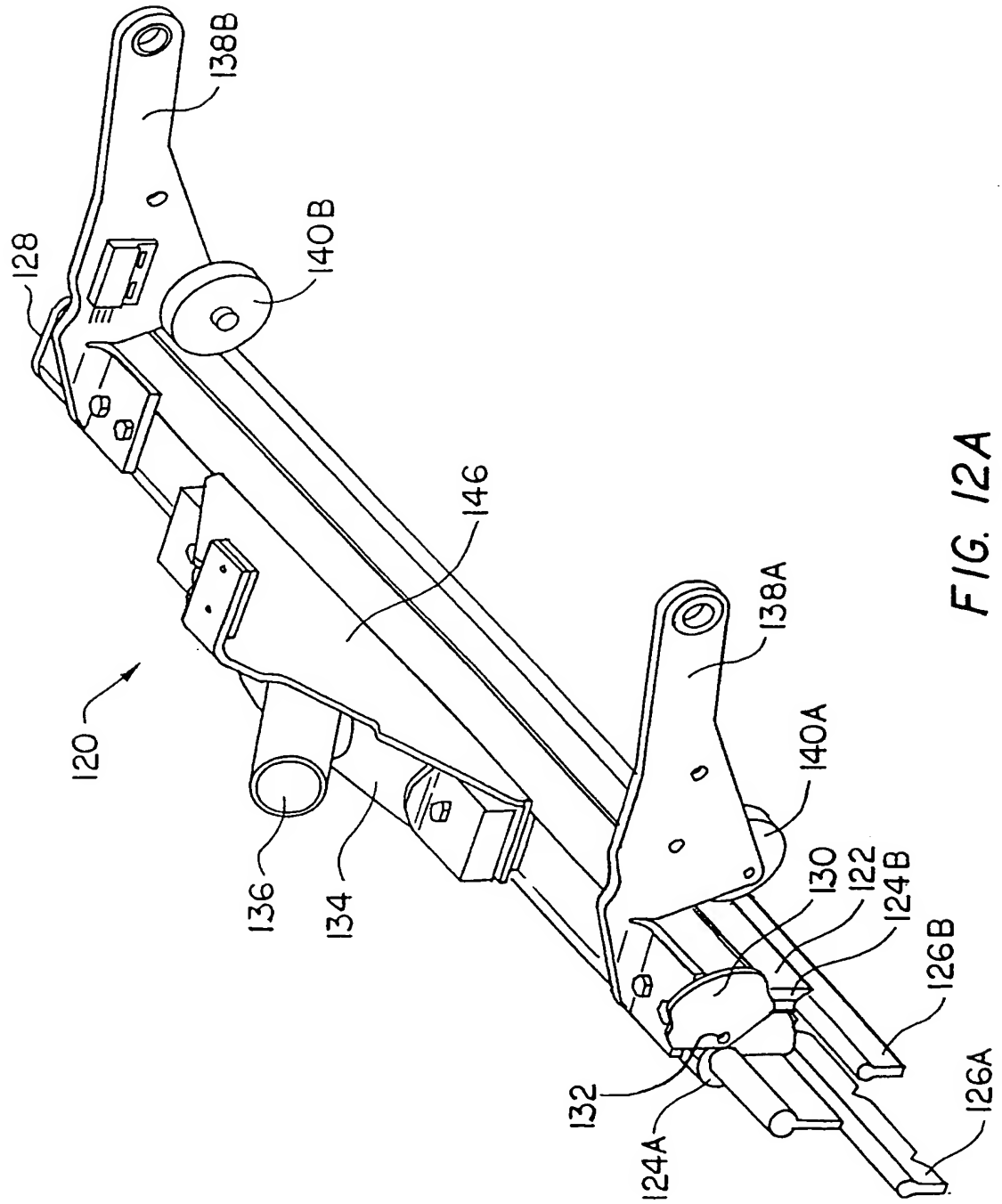

FIG. 12A

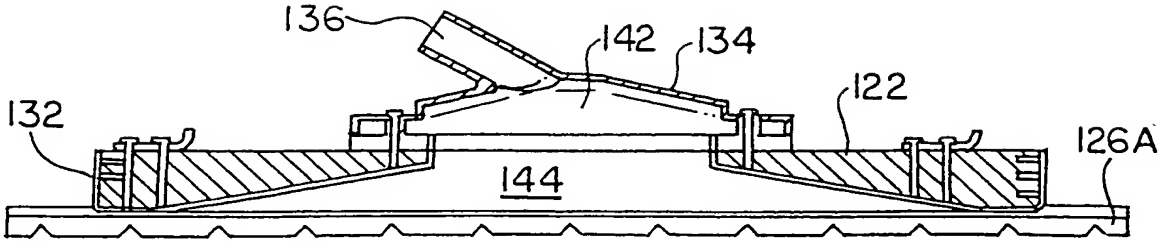

FIG. 13

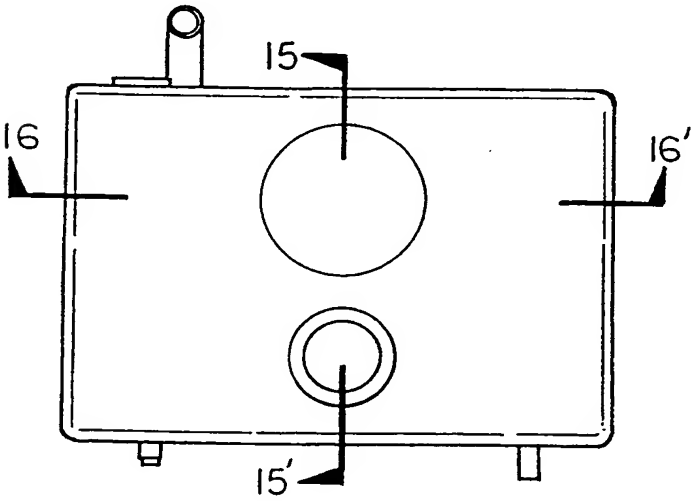

FIG. 14A

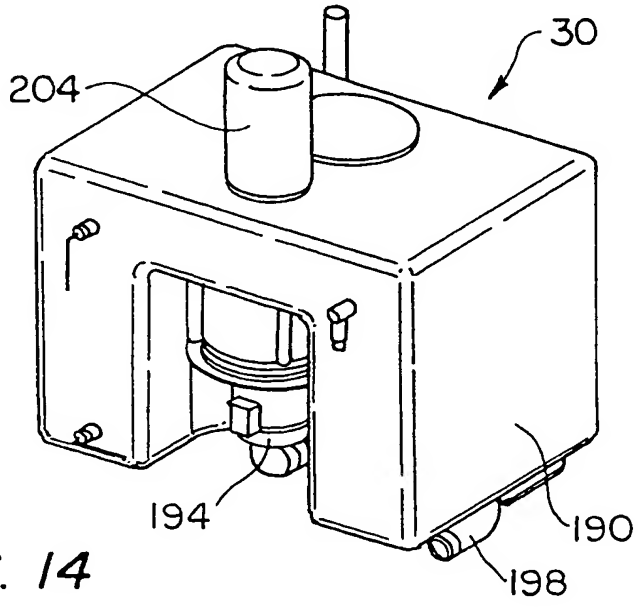

FIG. 14

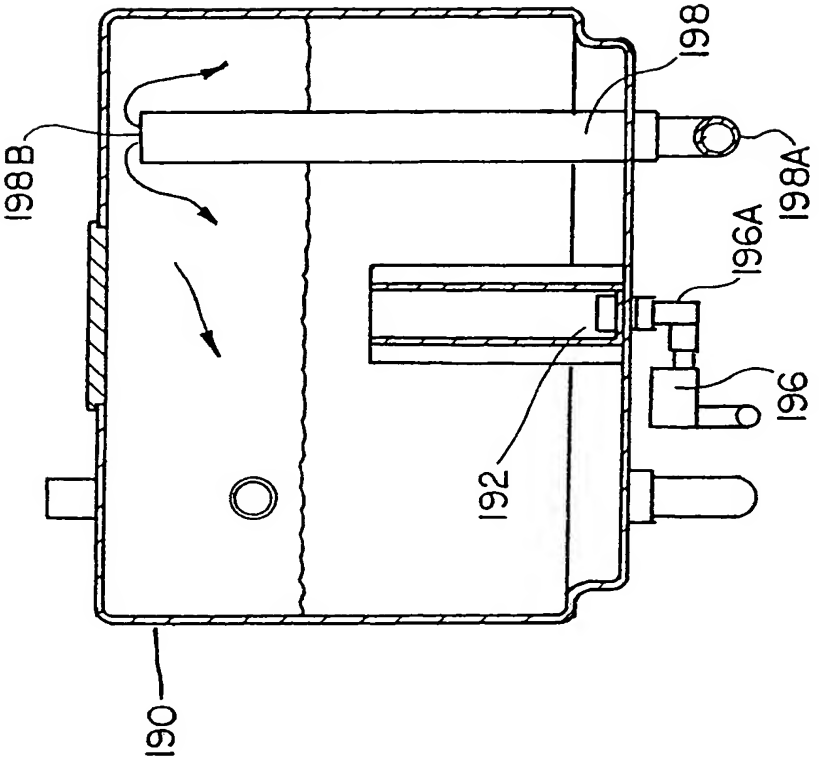

FIG. 16

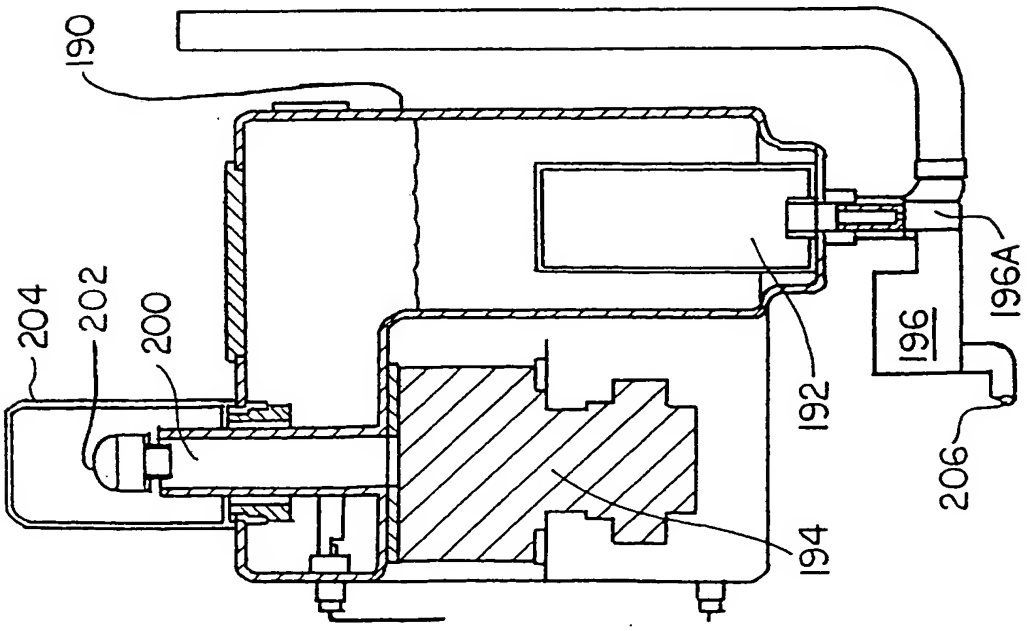

FIG. 15

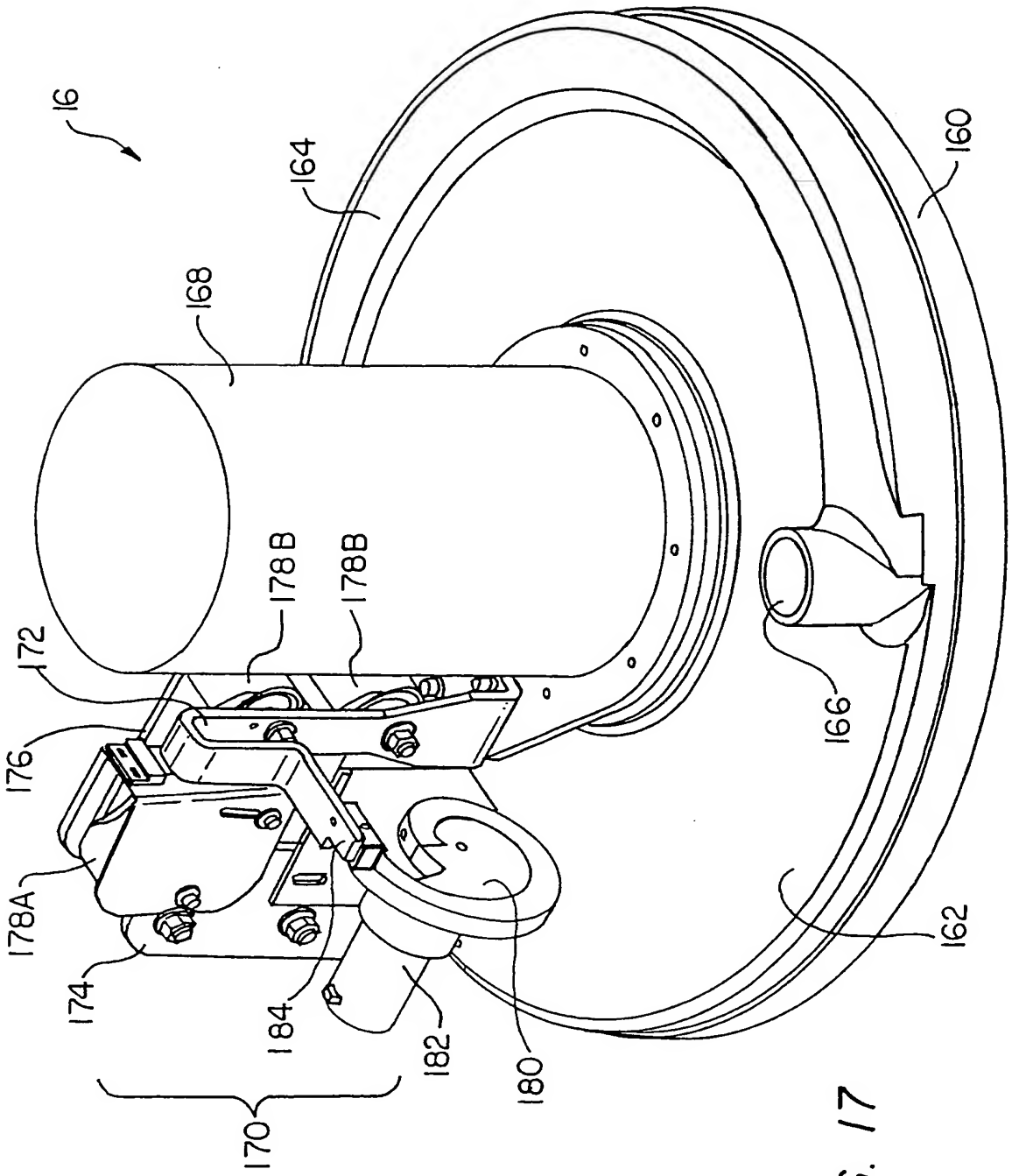

FIG. 17

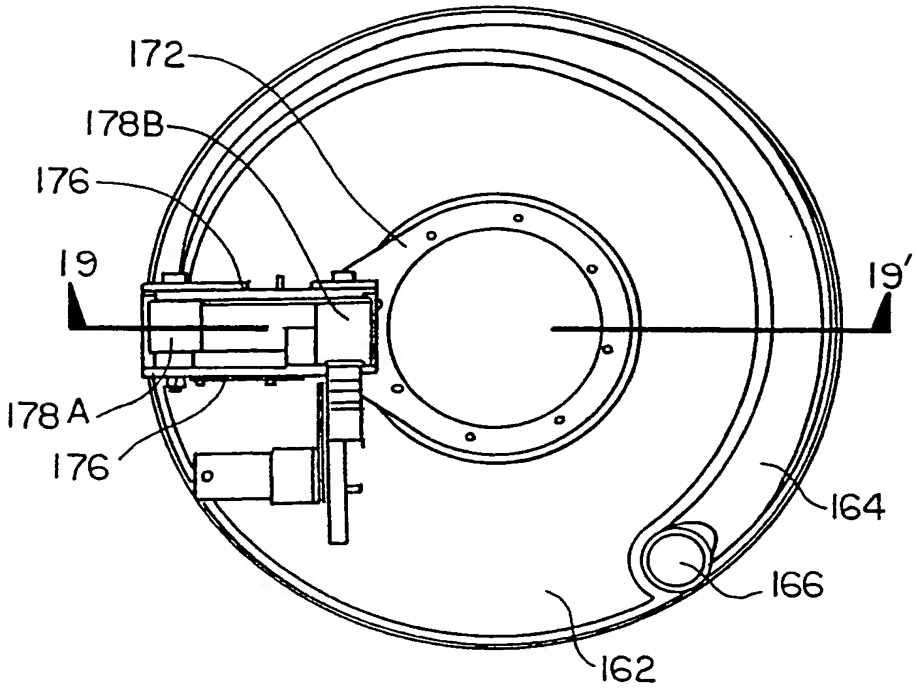

FIG. 18

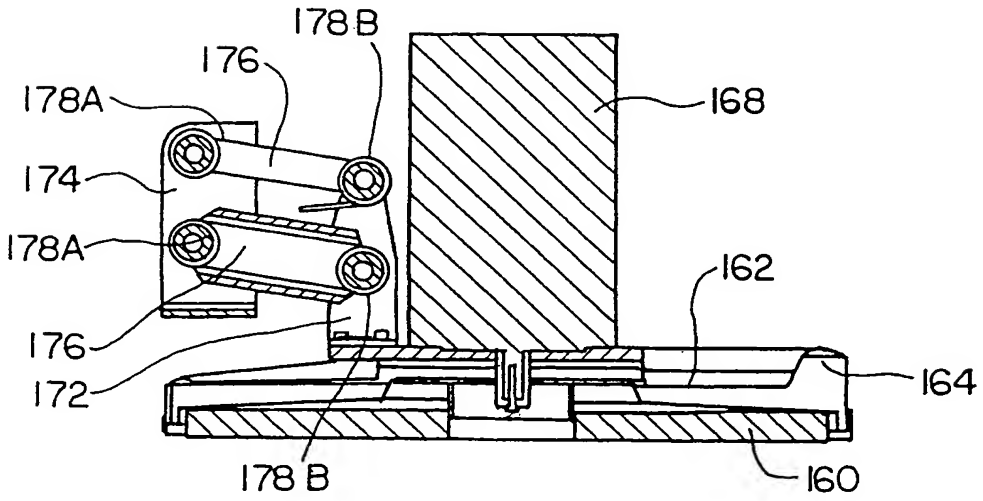

FIG. 19

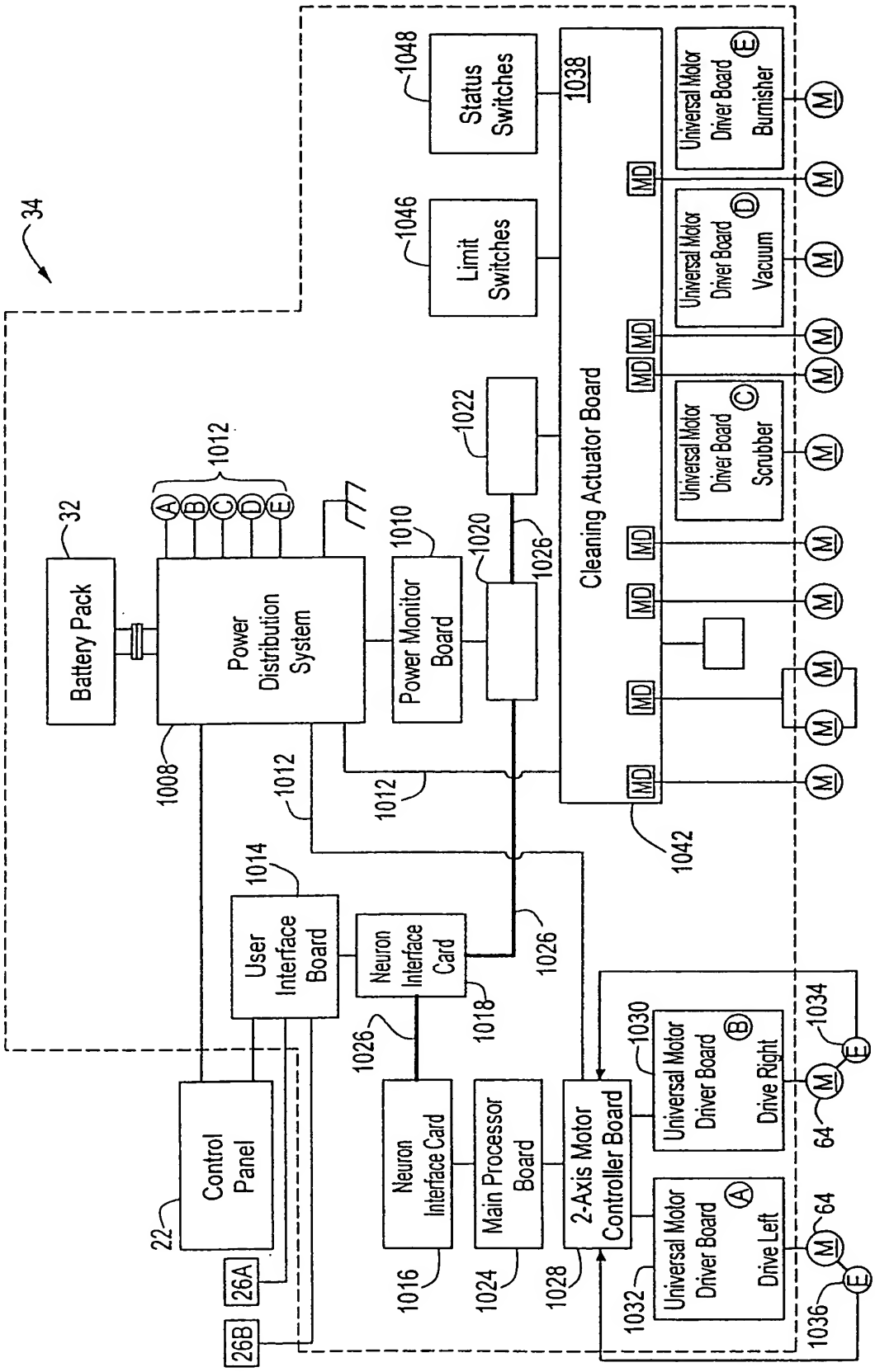

FIG. 20

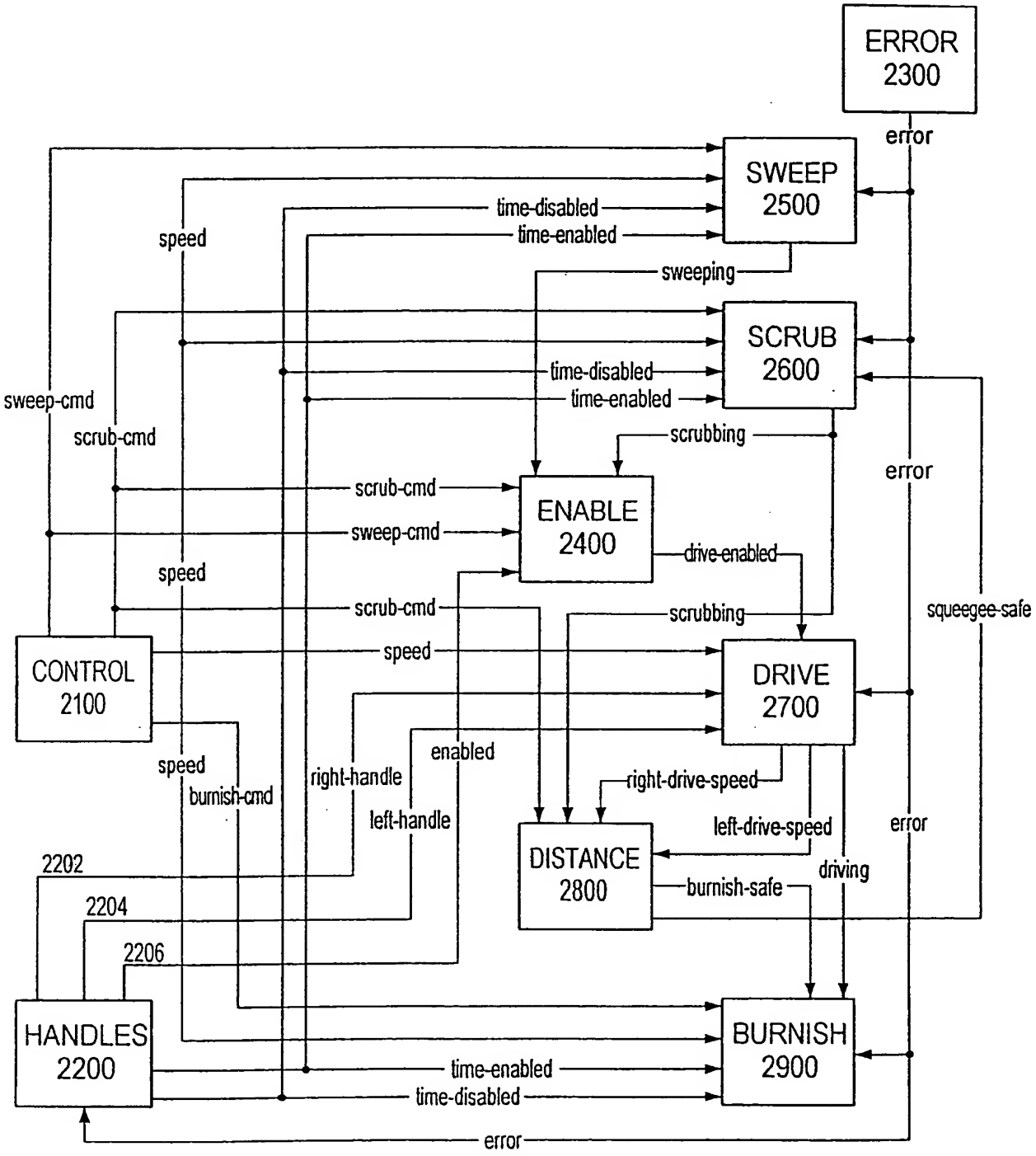

FIG. 2I

FIG. 24

2200

```
HANDLES
  variables: enable-time, disable-time

if (NOT error) {                                          } 2202
  right-handle is ui-right-handle                         } 2204
  left-handle is ui-left-handle

  if (right-handle or left-handle) {                      }
    disable-time is FALSE                                 }
    time-disabled is FALSE                                } 2206
    if (NOT enable-time)                                  }
      enable-time = current time                          }
    time-enabled = current time - enable-time              }
  }
  else {
    enable-time is FALSE                                  }
    time-enabled is FALSE                                 } 2208
    if (NOT disable-time)                                 }
      disable-time = current time                         }
    time-disabled = current time - enable-time            }

  }
  enabled is (right-handle OR left-handle)                } 2210
}
else {
  enabled is FALSE                                        }
  right-handle is FALSE                                   }
  left-handle is FALSE                                    } 2212
  time-enabled is FALSE                                   }
  time-disabled is FALSE                                  }
}
```

2300

```
ERROR
**low level software filters the hopper full sensor**

  if (ui-hopper-missing OR ui-tank-overflow OR ui-tank-empty OR system-error)  } 2302
    error is TRUE
```

FIG. 22

2800

```
DISTANCE
variable : burnish distance, squeegee distance

if (scrub-cmd AND scrubbing) {                                   } 2802
  if (NOT burnish-distance)                                      }
    burnish-distance = 0                                         }
  else                                                           }
    burnish-distance = burnish-distance +                        }
      DistanceFunction (right-drive-speed, left-drive-speed, rate) } 2804
}                                                                }
else                                                             }
  burnish-distance = FALSE                                       }

if (scrubbing)                                                   }
  squeegee-distance = FALSE                                      } 2806
  squeegee-time = FALSE                                          }
else                                                             }
  if (NOT squeegee-distance)                                     } 2808
    squeegee-distance = 0                                        }
    squeegee-time = current-time + squeegee-timeout              } 2810
  else                                                           }
    squeegee-distance = squeegee-distance +                      } 2812
      DistanceFunction (right-drive-speed, left-drive-speed, rate) }

if (squeegee-time) {                                             } 2814
  if ( (squeegee-distance > safe-distance-to-squeegee) OR        } 2816
      (current-time > squeegee-time))                            }
    squeegee-safe is TRUE                                        }
  else                                                           } 2818
    squeegee-safe is FALSE                                       }
}

if (burnish-distance > safe-distance-to-burnish)                 } 2820
  burnish-safe is TRUE                                           }
else                                                             } 2822
```

FIG. 29

```
CONTROL
** sweep, scrub, and burnish buttons polled at low level **

sweep-cmd is ui-sweep-cmd
scrub-cmd is ui-scrub-cmd
burnish-cmd is ui-burnish-cmd
speed = ui-speed
```

FIG. 23

2400

```
ENABLE
drive-enabled is (enabled AND (NOT(sweep-cmd XOR sweeping)) AND (NOT (scrub-cmd
XOR scrubbing)))
```

2402

FIG. 25

```
DRIVE
** run at speed-ramp-rate times per second **
{
 if (right-wheel-target-speed is NOT right-wheel-current-speed)
   right-wheel-current-speed = right-wheel-current-speed + minimum of:
                               speed-ramp-step
                               (right-wheel-target-speed - right-
wheel-current-speed)
 if (left-wheel-target-speed is NOT left-wheel-current-speed)
   left-wheel-current-speed = left-wheel-current-speed + minimum of :
                               speed-ramp-step
                               (left-wheel-target-speed - left-
wheel-current-speed)
 right-drive-speed = right-wheel-current-speed
 left-drive-speed = left-wheel-current-speed
}

if (drive-enabled AND (NOT error) ) {
 if (left-handle)
   right-wheel-target-speed = ConvertSpeedFunction (speed)
 else
   right-wheel-target-speed = speed=wheel-stop
 if (right-handle)
   left-wheel-target-speed = ConvertSpeedFunction (speed)
 else
   left-wheel-target-speed = speed-wheel-stop

 if (right-handle OR left-handle)
   if (NOT driving)
     driving is TRUE
 else
   if (driving)
     driving is FALSE
}
else (
 right-wheel-target-speed = speed-wheel-stop
 left-wheel-target-speed = speed-wheel-stop
 if (driving)
   driving is FALSE
}
```

2702 2704 2706 2708 2710 2712 2714 2716 2718

FIG. 28

SWEEP

```
if (sweep-cmd AND (speed is NOT reverse) AND (NOT error) ) (
  if (time-enabled > delay-on-sweep-start)
    if (sweeper is off)
      turn sweeper on
  if (time-enabled > delay-on-sweep-lower)
    if (sweeper is up)
      sweeper to down
    else
      if (NOT sweeping)
      sweeping is TRUE
  if (time-disabled > delay-off-sweep-raise)
    if (sweeper is down)
      raise sweeper
      if (sweeping)
      sweeping is FALSE
  if (time-disabled > delay-off-sweep-stop)
    if (sweeper is on)
      turn sweeper off
}
else {
  if (sweeper is down)
    sweeper to up
    if (sweeping)
      sweeping is FALSE
  if (sweeper is on)
    turn sweeper off
}
```

2502
2504
2506
2508
2510
2512

FIG. 26

```
if (scrub-cmd AND (speed is NOT reverse) AND (NOT error) ) (
 if (time-enabled > delay-on-scrub-start) (
  if (shroud is closed)
   open shroud
  if (scrubber is off)
   turn scrubber on
  if (vacuum is off)
   turn vacuum on
  if (squeegee is up)
   lower squeegee
  if (solenoid is closed)
   open solenoid
 }
 if (time-enabled > delay-on-scrubber-lower) {
  if (pump is off)
   turn pump on
  if (scrubber is up)
   lower scrubber
  else
   if (NOT scrubbing)
   scrubbing is TRUE
 }
 if (time-disabled > delay-off-scrubber-raise) (
  if (scrubber is down)
   raise scrubber
   if (scrubbing)
   scrubbing is FALSE
  if (pump is on)
   turn pump off
 }
 if (time-disabled > delay-off-scrubber-stop) (
  if (scrubber is on)
   turn scrubber off
  if (solenoid is open)
   close solenoid
  if (squeegee-safe) (
   if (shroud is open)
   close shroud
   if (squeegee is down)
   raise squeegee
   if (vacuum is on)
   turn vacuum off
  }
 }
}
```

2602 2604 2606 2608 2610 2612

FIG. 27

```
else(                                              }
  if (scrubber is down)                            }
    raise scrubber                                 }
    if (scrubbing)                                 }
      scrubbing = FALSE                            }
  if (pump is on)                                  } 2614
    turn pump off                                  }
  if (scrubber is on)                              }
    turn scrubber off                              }
  if (solenoid is open)                            }
    close solenoid                                 }
if ( (speed is reverse) OR error) (                }
  if (shroud is open)                              }
    close shroud                                   }
  if (squeegee is down)                            } 2616
    raise squeegee                                 }
  if (vacuum is on)                                }
    turn vacuum off                                }
}                                                  }
else if (squeegee-safe) (                          }
  if (shroud is open)                              }
    close shroud                                   } 2618
  if (squeegee is down)                            }
    raise squeegee                                 }
  if (vacuum is on)                                }
    turn vacuum off                                }
```

FIG. 27A

BURNISH

```
if (burnish-cmd AND (speed is NOT reverse) AND (NOT error) ) (
 if (time-enabled > delay-on-burnisher-start) (
  if (burnisher off)
   turn burnisher on
  if (burnish-safe AND driving) (
   if (burnisher NOT down)
   burnisher to down
   else
   if (NOT burnishing)
    burnishing is TRUE
  {
  else
   if (burnisher NOT at middle)
    burnisher to middle
 }
 if ( (time-disabled > delay-off-burnish-stop) OR (NOT driving) ) (
  if (burnisher is down)
   burnisher to middle
   if (burnishing)
   burnishing is FALSE
  if (burnisher is on)
   turn burnisher off
 }
 if (time-disabled > delay-off-burnish-raise)
  if (burnisher NOT up)
   burnisher to up
}
else{
 if (burnisher is down)
  burnisher to up
  if (burnishing)
   burnishing is FALSE
 if (burnisher is on)
  turn burnisher off
}
```

2902
2904
2906
2908
2910
2912
2914

FIG. 30